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## SURFACE MODIFICATION OF NANOGOLD PARTICLES INTO THE POLYCAPROLACTONE/HYDROXYAPATITE FOR BONE TISSUE ENGINEERING

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### Abstract

The main goal of this study was intended to design a kind of ideal biomaterial for bone tissue engineering application. Previously, we have developed a series of nanogold composites, the better biocompatibility and cellular biological performance, such as differentiation, migration and vascularization ability was attributed to the extensively modified material surface morphological changing in the incorporated of a small amount of nanogold particles (AuNPs) at optimal concentration. It was used AuNPs while incorporated into the polycaprolactone/hydroxyapatite surface (PCL-HA) as a model system in order to form PCL-HA-AuNPs composites (PCL-HA-AuNPs) for bone tissue regeneration. In this study, we analysis (1) to define material surface morphological change (2) to test the biocompatibility capacity and (3) to investigate the behavior of osteoblast cells (MC3T3) and the differentiation ability of mesenchymal stem cells (MSCs) while cultured on this biomaterials by using *in vitro* study in order to confirm the regeneration ability induced by PEG-AuNPs/PCL-HA. We hope this novel PEG-AuNPs/PCL-HA biomaterials combination of MSCs can provide effective clinical strategies for bone tissue engineering in the future.

**Keywords:** Polycaprolactone, hydroxyapatite, nanogold particles, mesenchymal stem cell, MC3T3